

786809

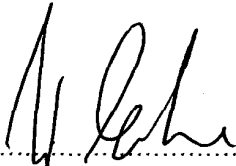
JC08 Rec'd PCT/PTO 08 MAR 2001

DD01E057WOUS/sa010044/Dr.L.-Dr.Re/sa/23.02.2001

## Verification of Translation

I, Dr. Waldemar Leitner, Zerrennerstraße 23-25, D-75172 Pforzheim, Germany, German and European patent attorney, fully conversant with the German and English languages, hereby certify that I am the translator and that to the best of my knowledge and belief the following is a true translation of the pages amended under chapter II of PCT of the International Patent Application No. PCT/EP99/06264.

Signed this February 23, 2001



Dr. Waldemar Leitner  
-patent attorney-

DD01E057WO/sa01s004/Dr.L.-Dr.Re/23.02.01/sa

---

**Method for producing a hybrid frame or hybrid housing and a  
corresponding hybrid frame or hybrid housing**

---

**Description**

- 5 The invention relates to a method for producing a hybrid frame or hybrid housing, in which a leadframe with soldering and/or bonding tags after being placed into an injection mould is held in this injection mould and is moulded with plastic to form a housing part of the hybrid frame or the hybrid housing, and to such a hybrid frame or such a hybrid housing.
- 10 Upon punching of the soldering and/or bonding tags of the leadframe a buckling due to punching occurs. This buckling due to punching can cause in a disadvantageous manner the buckling of the whole surface of the leadframe, so that there is no plane and regular surface especially of the soldering and/or

bonding tags. The soldering or bonding tags of the leadframe, which project from the plastic material after moulding, are not held during moulding, but it is only provided, that the injection mould is formed in a way, that the bonding tags cannot move in the plastic injection mould during the moulding process.

5 A method with the features mentioned at the beginning is known from the JP 57 010955. There a leadframe is put into a two-part mould. By joining together the two parts of the mould, the soldering and/or bonding tags of the leadframe are bent by the co-acting of projections in the one part of the mould and grooves in the other part. Furthermore, the frame of the leadframe is held and fixed during the moulding process by means of pressing rods. The bending of the soldering and/or bonding tags is not capable of compensating a buckling due to punching of the soldering and/or bonding tags, which occurs upon punching the leadframe, so that also after moulding the leadframe, in a disadvantageous manner, no plane and regular surface of the soldering and/or bonding tags is provided.

15 From the US 5,359,761 a method is known, in which a leadframe is put in a two-part mould and moulded with plastic material. Furthermore, there is provided a punching apparatus, with which a frame of the leadframe can be torn off along a predetermined breaking point, while the leadframe is positioned in the two-part mould.

20 From the EP 0 642 165 a hybrid frame made of plastic material with electric connection elements is known, which has a stiffening produced by a form-stamping.

It is therefore the object of the invention to further develop a method of the kind mentioned at the beginning, that the quality of the surface of the soldering and/or bonding tags of the hybrid frame or hybrid housing to be formed is improved.

25

This object is achieved according to the invention, in that the soldering and/or bonding tags of the leadframe are held down in the injection moulding die for the compensation of surface defects at least during a part of the injection moulding process by means of a stamp.

- 5 The method according to the invention distinguishes itself in that by the measures according to the invention the position of the individual soldering and/or bonding tags of the leadframe is well reproducible and can be dimensioned within close limits. The holding down of the individual bonding surfaces by the stamp during the moulding process brings forth in an advantageous manner, that surface
- 10 defects of the leadframe are compensated. Furthermore, it is advantageous, that by the holding down of the bonding tags during the moulding process, the vibrational behaviour of the bonding tags is influenced in a positive manner. The invention has the further advantage, that in this manner the bonding surfaces are protected from moulding influences during the moulding process. The holding
- 15 down of the soldering and/or bonding tags of the leadframe during the moulding process has the advantage, that in this manner position tolerances in a direction perpendicular to the surface of the leadframe are compensated, so that a good reproducibility in this z-axis is given as well.

- An advantageous variant of the invention provides that as a stamp a forming
- 20 stamp is used. This measure according to the invention has the advantage, that the soldering and/or bonding surfaces of the soldering and/or bonding tags which are produced in this way are of a high quality, especially if a polished forming stamp is used. Additionally, it is achieved in this way, that in the section of form-stamping at all positions of the soldering and/or bonding tags the same
- 25 soldering and/or bonding conditions are given, so that the soldering and/or bonding process is not critical for the applicant and can therefore be dimensioned within wider limits.